

VK-1 SERVICE NOTES

SPECIFICATIONS

TUNE RANGE: ± 30 cents CHORUS-VIBRATO RATE: 0.3-8 Hz
OUTPUT: L = -24 dB; M = -12 dB; H = 0 dB
POWER CONSUMPTION: 20 Watts
DIMENSIONS: 1130 (w) x 148 (h) x 448 (d) mm
WEIGHT: 16 Kg

Knob no.78 (016-078)

Pot. EVHCOAK15B14 (026-003)
(EVH8MA360B14)

Top cover H18 (086H018)

Trim H6 (093H006)

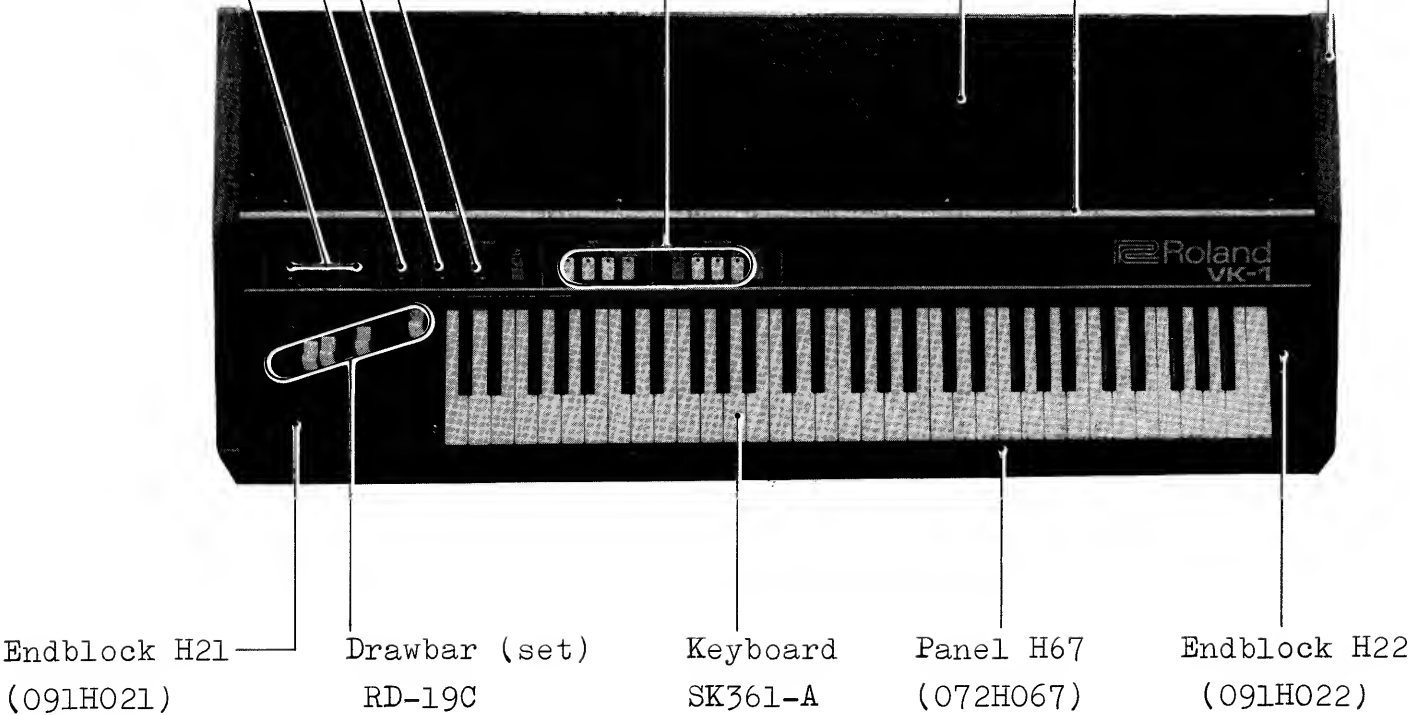
Pot. EVHCOAK15A15 (026-176)
(EVH8MA360A15)

Pot. EVHCOAK15B54 (026-004)
(EVH8MA360)

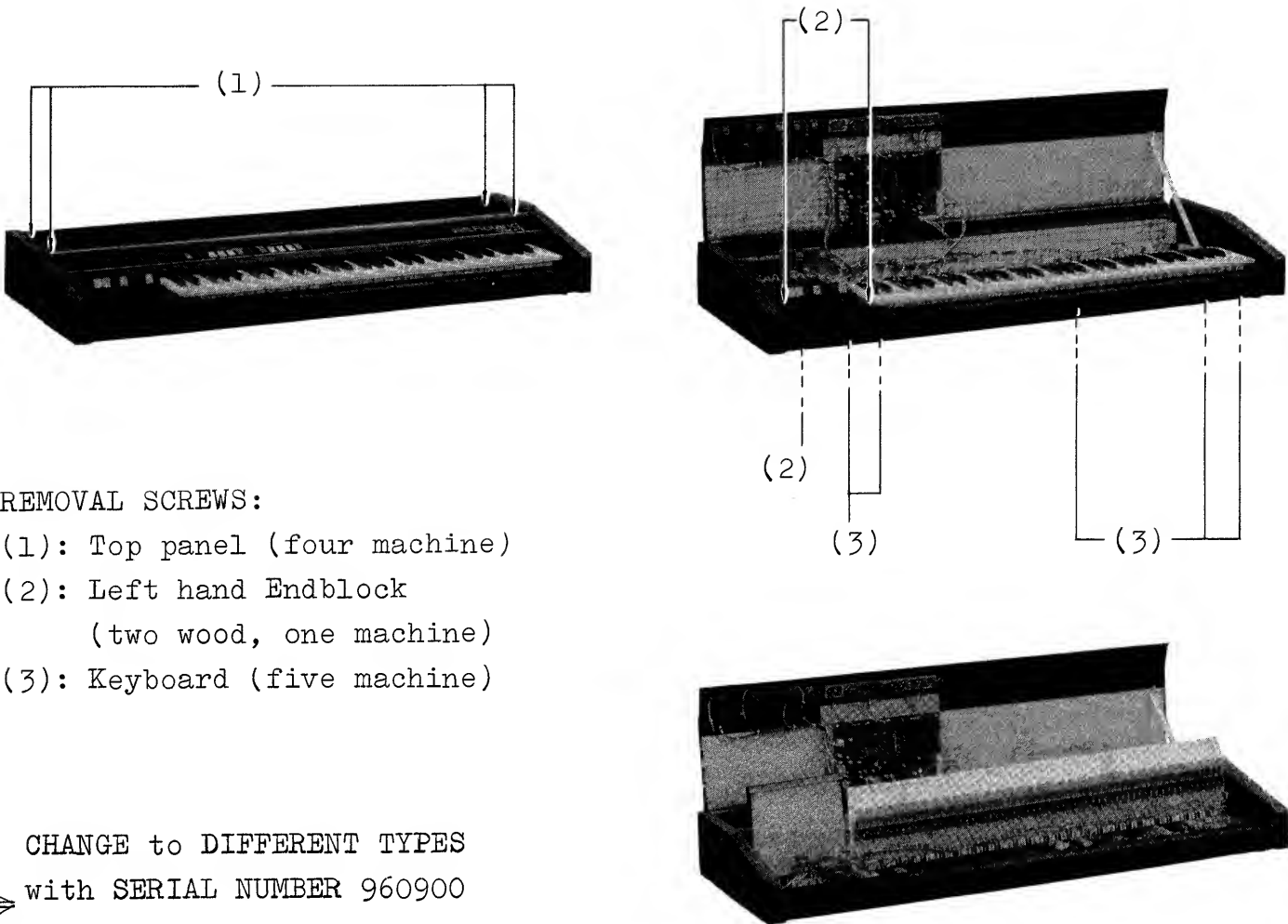
Pot. EVHCOAK15B14 (026-003)

Cabinet H221
(081H221)

Switch 320. 2 E1-1
White (001-315)
Orange (001-317)
Blue (001-320)



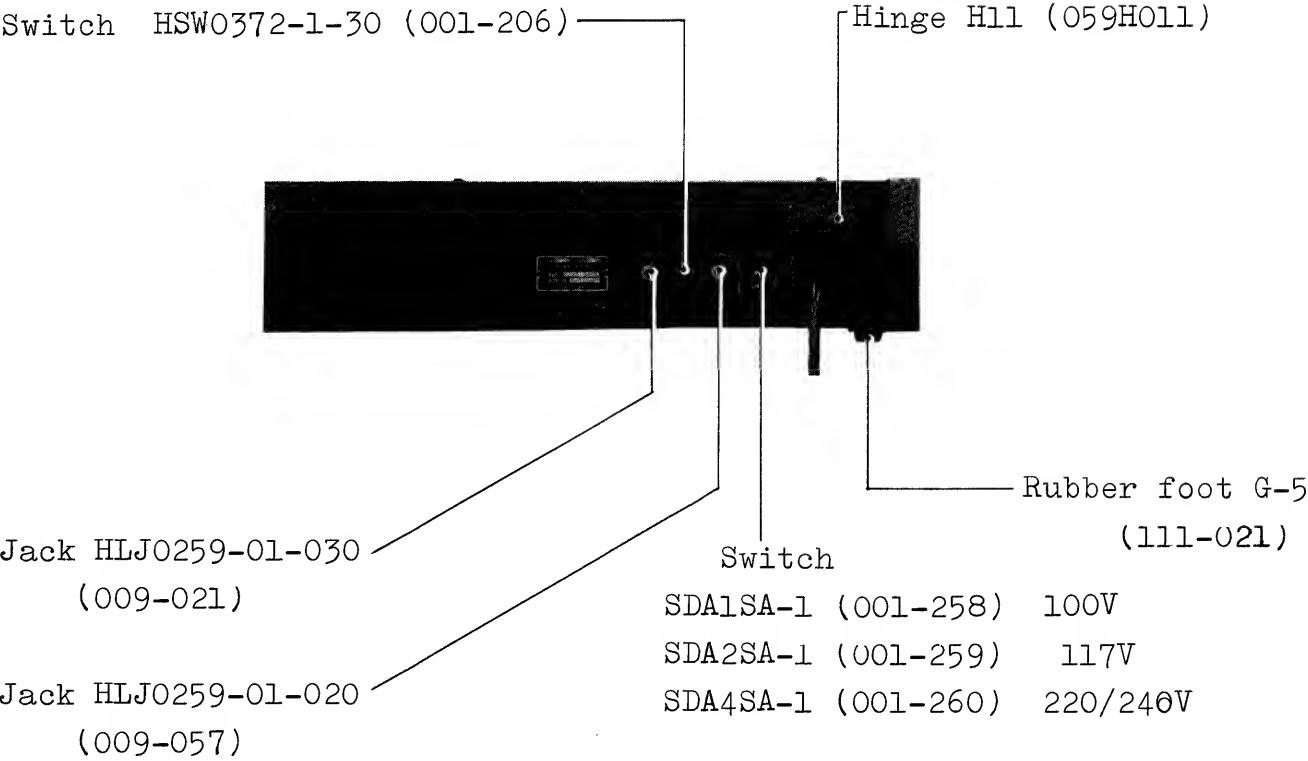
DISASSEMBLY



REMOVAL SCREWS:

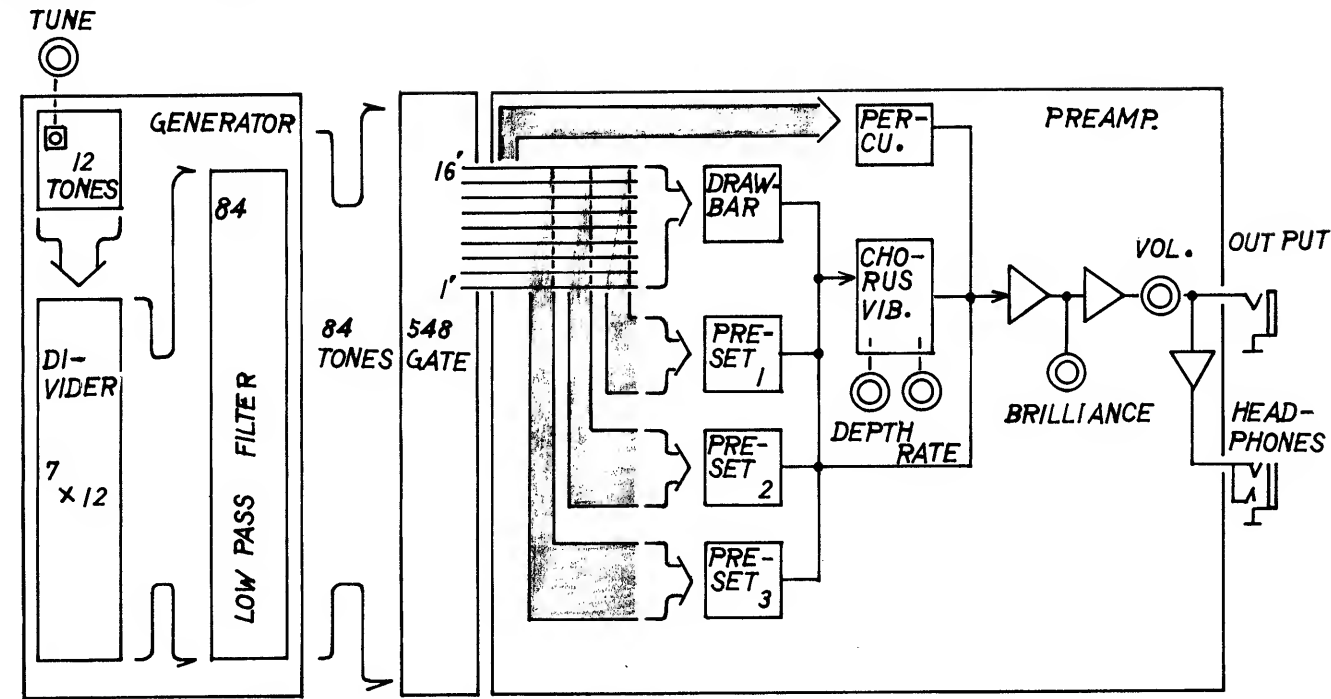
- (1): Top panel (four machine)
- (2): Left hand Endblock
(two wood, one machine)
- (3): Keyboard (five machine)

CHANGE to DIFFERENT TYPES
with SERIAL NUMBER 960900
Detail in PARTS LIST on PAGE 10





BLOCK DIAGRAM



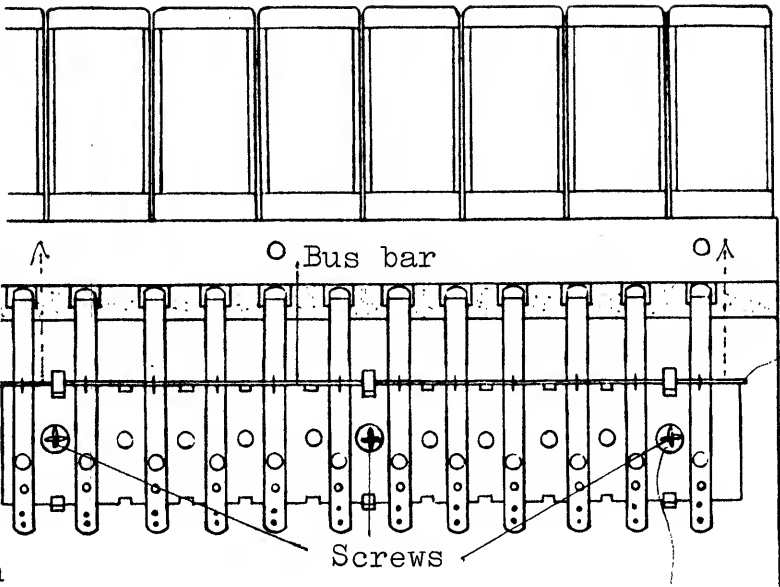
HOW TO REMOVE KEY and KEYSWITCH UNIT

Key (see fig. left below)

1. Remove key stopper (12).
2. Remove key spring (3).
3. Slide key leftwards and lift it out of chassis.
4. When inserting a new key, take care not to bend contact leaf (7) with the key leg.

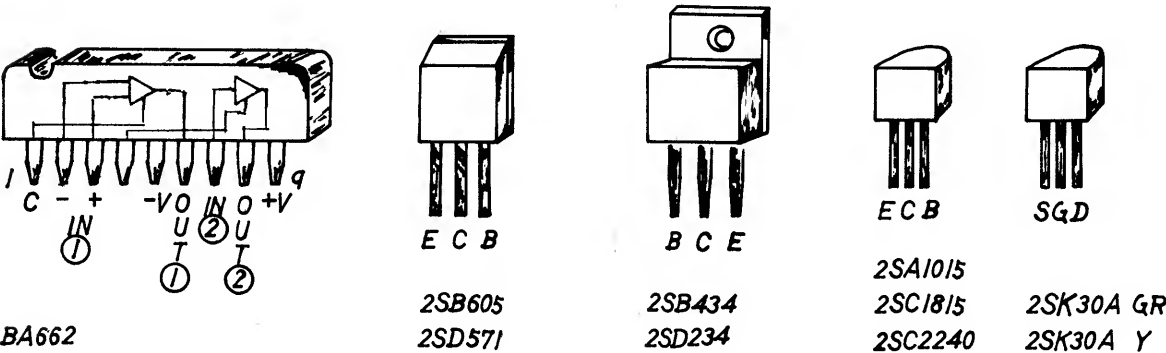
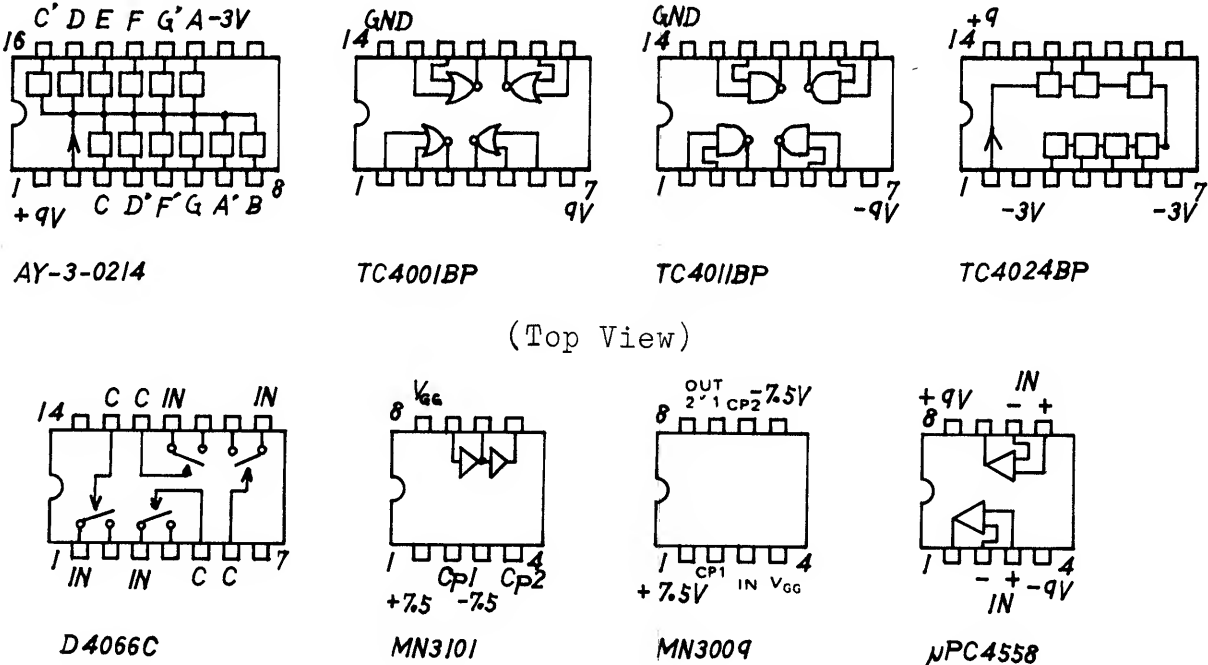
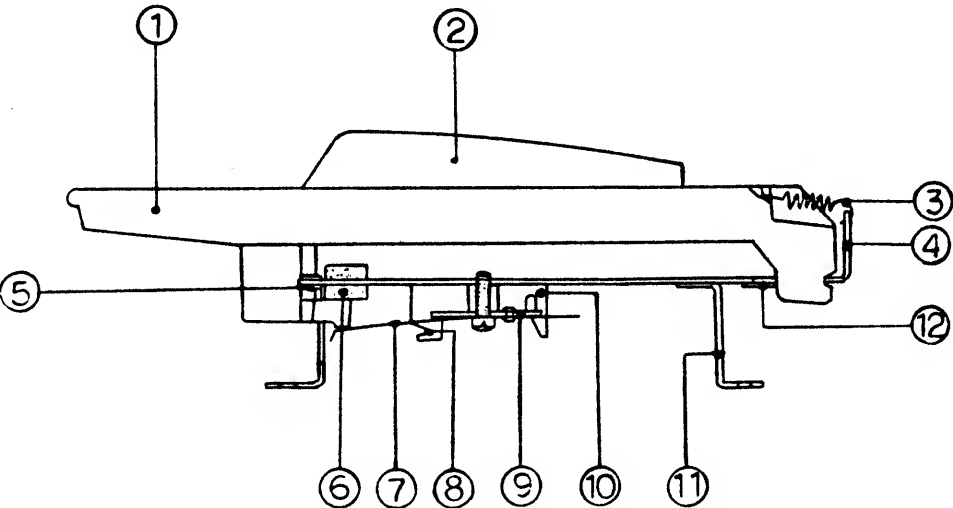
Keyswitch unit (see fig. right)

1. Pull bus bar upward out of hooks.
2. Remove three screws on the switch unit, it's ready to remove.



KEYBOARD PARTS

NO.	PART NO.	DESCRIPTION	NO.	PART NO.	DESCRIPTION
1	106H026	Natural key C, F	5	068H004	Guide bush H4
1	106H027	Natural key D	6	101H143	Level felt H143
1	106H028	Natural key E, B	7	071H044	Contact leaf H44
1	106H029	Natural key G	8	071H049	Bus bar 6lp H49
1	106H030	Natural key A	9	043H007	Switch unit 12p H7
1	106H031	Natural key C, F'	9	043H008	Switch unit 13p H8
2	106H032	Sharp key	10	104H029	Holder H29
3	070H029	Key spring H29	11	062H024	Chassis bracket H24
4	061H086A	Chassis H86A	12	098H006	Key stopper H6



HOW TO ISOLATE DEFECTIVE KEYS

Reading of information described on page 6 is recommendable for understanding Gate-Keyer circuit conception.

Example 1

D3 signal won't come out with 8' drawer.

1. See table 1 on page 6. Find the coincidence point between D3 column and 8-foot row -- 27D.

Analog switch is no.27 located at IC25 in 8-foot row on GTH41.

2. While holding down D3 key, check the switch pins for input signal, control voltage, and output signal.

Example 2

A4 leaks without any key pressed when 5 1/3' bar is drawn.

From the table, suspect one is no. 46 switch located at IC35.

1. Check the control and output pins and compare the results with other switch pins.

Diodes

D101~D104: M8555 4pcs

ICs

IC101~IC112: TC4024P 12pcs

Transistors

Q101-Q102-Q104: 2SC1815GR 169pcs

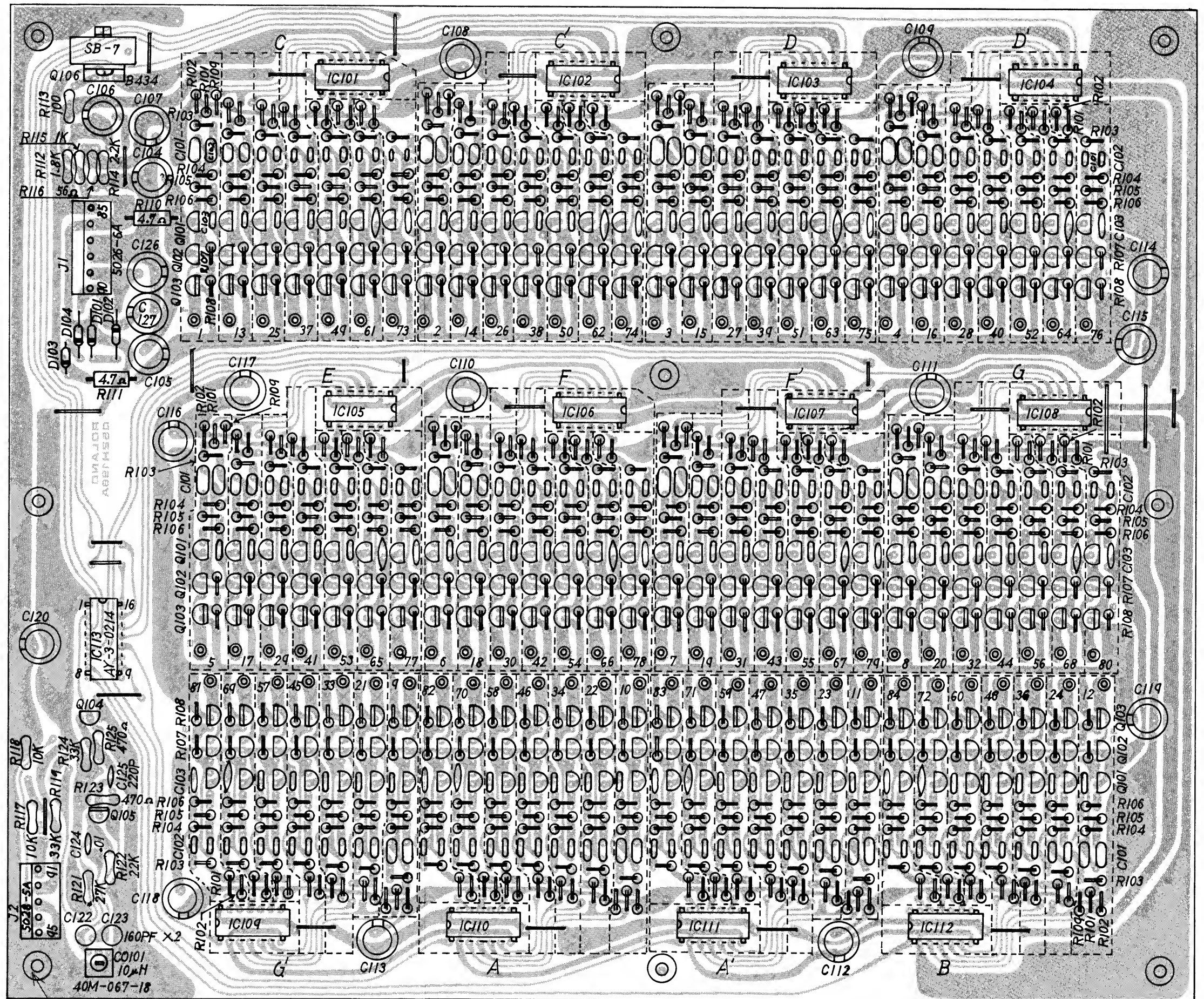
Q103 Q105 2SA1015GR 85pcs

Electrolytics

C106-C108-C120: 100/16 16pcs

C126-C127

C104-C105-C107: 470/16 3pcs



PCB 052H198A

AGH18A (144H018A)

TABLE of RESISTANCE and CAPACITANCE

No	R101	R102	R103.104.105	R106	R107	R108	R109	C101.102	C103	Frequency
C										
1-2	47K	5.6K	47K	220Ω	3.3K	22K	56K	.068 μ	.012 μ	65.4 · 69.29
13-14	82K						NONE	.027 μ	.0068 μ	130.81 · 138.59
25-26	56K							.015 μ	.0033 μ	261.62 · 277.18
37-38	39K		↓					.0068 μ	.0015 μ	523.25 · 554.36
49-50	27K		22K					.0068 μ	.0018 μ	1046.50 · 1108.72
61-62	18K		↓					.0033 μ	820P	2093.00 · 2217.45
73-74	15K	↓	↓	↓	↓	↓	↓	.0018 μ	390P	4186.00 · 4434.91
D										
3-4	47K	5.6K	47K	220Ω	3.3K	22K	56K	.056 μ	.012 μ	73.41 · 77.78
15-16	82K						NONE	.027 μ	.0056 μ	146.83 · 155.56
27-28	56K							.012 μ	.0027 μ	293.66 · 311.12
39-40	39K		↓					.0068 μ	.0015 μ	587.32 · 622.25
51-52	27K		22K					.0068 μ	.0015 μ	1174.65 · 1244.50
63-64	18K		↓					.0033 μ	820P	2349.31 · 2489.01
75-76	15K	↓	↓	↓	↓	↓	↓	.0018 μ	390P	4698.63 · 4978.02
E										
5-6	56K	5.6K	47K	220Ω	3.3K	22K	68K	.047 μ	.01 μ	82.40 · 87.30
17-18	82K						NONE	.022 μ	.0047 μ	164.81 · 174.61
29-30	56K							.01 μ	.0022 μ	329.62 · 349.22
41-42	39K		↓					.0056 μ	.0012 μ	659.25 · 698.45
53-54	27K		22K					.0056 μ	.0012 μ	1318.51 · 1396.91
65-66	18K		↓					.0027 μ	680P	2637.01 · 2793.82
77-78	15K	↓	↓	↓	↓	↓	↓	.0015 μ	390P	5274.03 · 5587.64
F										
7-8	56K	5.6K	47K	220Ω	3.3K	22K	68K	.039 μ	.0082 μ	92.49 · 97.99
19-20	68K						NONE	.018 μ	.0039 μ	184.99 · 195.99
31-32	47K							.01 μ	.0022 μ	369.99 · 391.99
43-44	33K		↓					.0047 μ	.001 μ	739.98 · 783.99
55-56	22K		22K					.0047 μ	.0012 μ	1479.97 · 1567.98
67-68	15K		↓					.0022 μ	680P	2959.95 · 3135.96
79-80	15K	↓	↓	↓	↓	↓	↓	.0012 μ	330P	5919.90 · 6271.72
G										
9-10	68K	5.6K	47K	220Ω	3.3K	22K	82K	.033 μ	.0082 μ	103.82 · 110.00
21-22	68K						NONE	.015 μ	.0033 μ	207.65 · 220.00
33-34	47K							.0082 μ	.0018 μ	415.30 · 440.00
45-46	33K		↓					.0047 μ	.001 μ	630.60 · 680.00
57-58	22K		22K					.0047 μ	.001 μ	1661.21 · 1760.00
69-70	15K		↓					.0018 μ	470P	3322.43 · 3520.00
81-82	15K	↓	↓	↓	↓	↓	↓	.001 μ	220P	6644.87 · 7040.00
A										
11-12	68K	5.6K	47K	220Ω	3.3K	22K	82K	.027 μ	.0068 μ	116.54 · 123.47
23-24	68K						NONE	.015 μ	.0033 μ	233.08 · 246.94
35-36	47K							.0082 μ	.0018 μ	466.16 · 493.88
47-48	33K		↓					.0033 μ	820P	932.32 · 987.76
59-60	22K		22K					.0047 μ	.001 μ	1864.65 · 1975.53
71-72	15K		↓					.0018 μ	470P	3729.30 · 3951.06
83-84	15K	↓	↓	↓	↓	↓	↓	.001 μ	220P	7458.61 · 7902.12

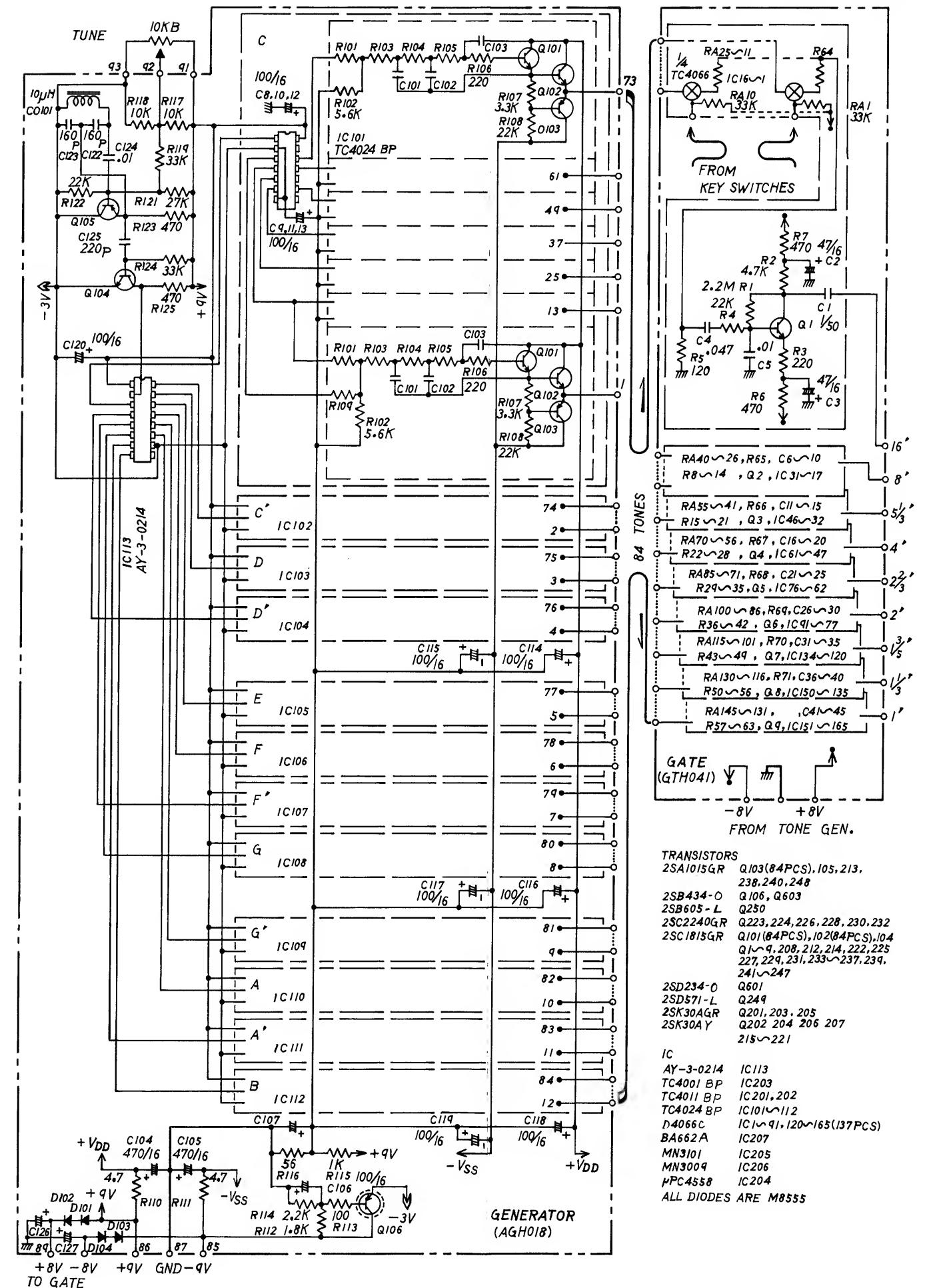


Figure 1 shows a clarified Gate-Analog keying circuits with their component- connector- location duplicating those on pc board, GTH41.

Each IC keyer in 16-foot (IC1-16) represents nine circuits in individual column, e. g. IC16-165, to which the same switch numbering is applied.

Control pins (CONT) of the same switch number in a column are tied together through foil pattern to be in parallel with the others.

All analog keying circuits are identical and function in the following manner:

For example, when C1 key is played, keyboard C1 keyswitch

applies +9 volts to SW-1 gates (CONT, pin 6) of IC16, 31, 46, 61, 76, 91, 134, 150 and 165, turning switches on, allowing audio signals from tone generators to pass the keying groups. Exceptions are IC1 and IC135, they are responsible for keying C6 signals of all footage minus 1'.

The RESISTOR ARRAYS for each IC in a footage are tied together in groups at their output and form IC keying groups connected to a BUS AMP.

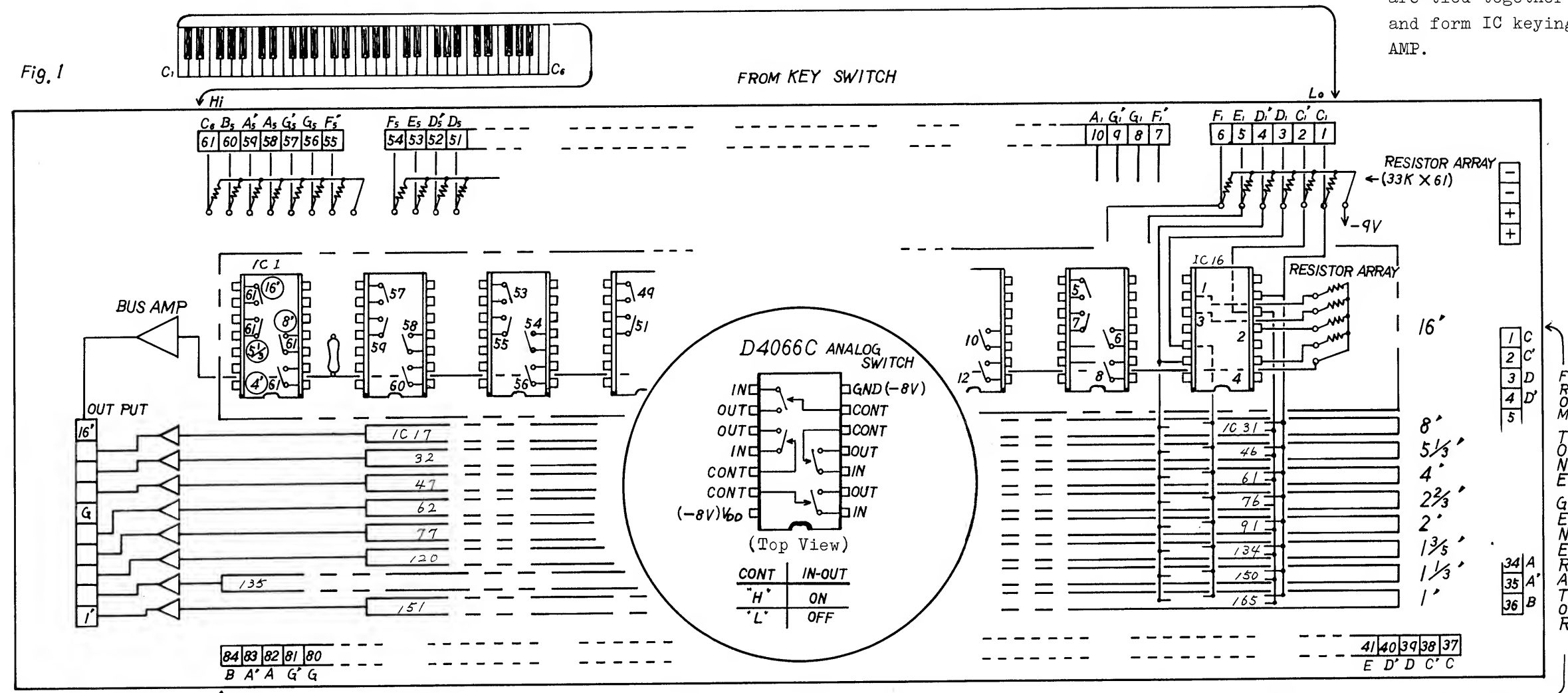


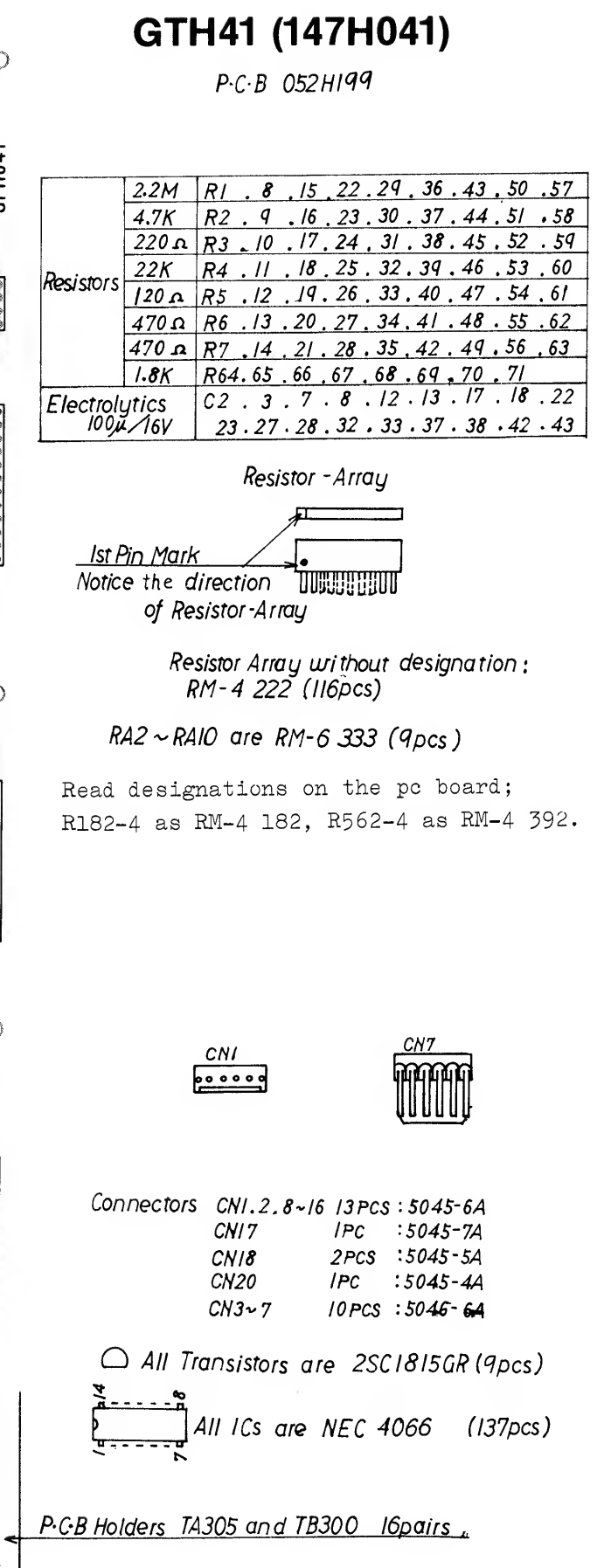
Table 1

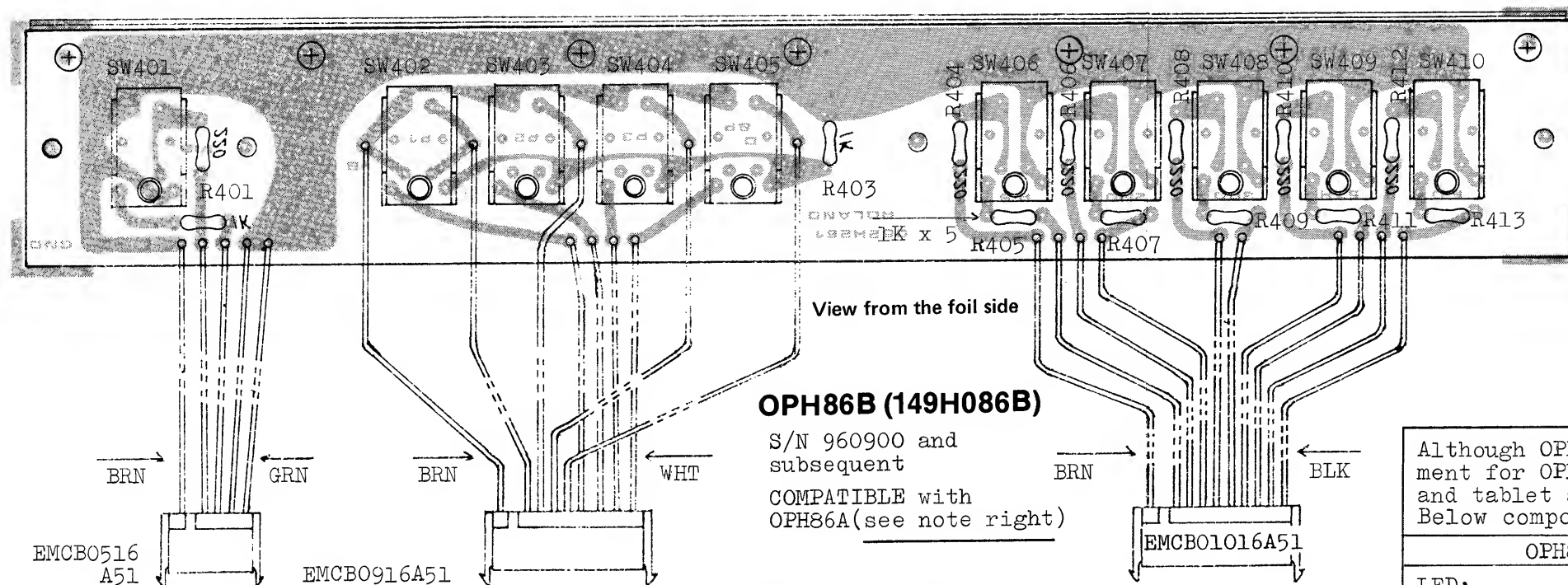
[illegible]

Every switch's input connects with generator output.

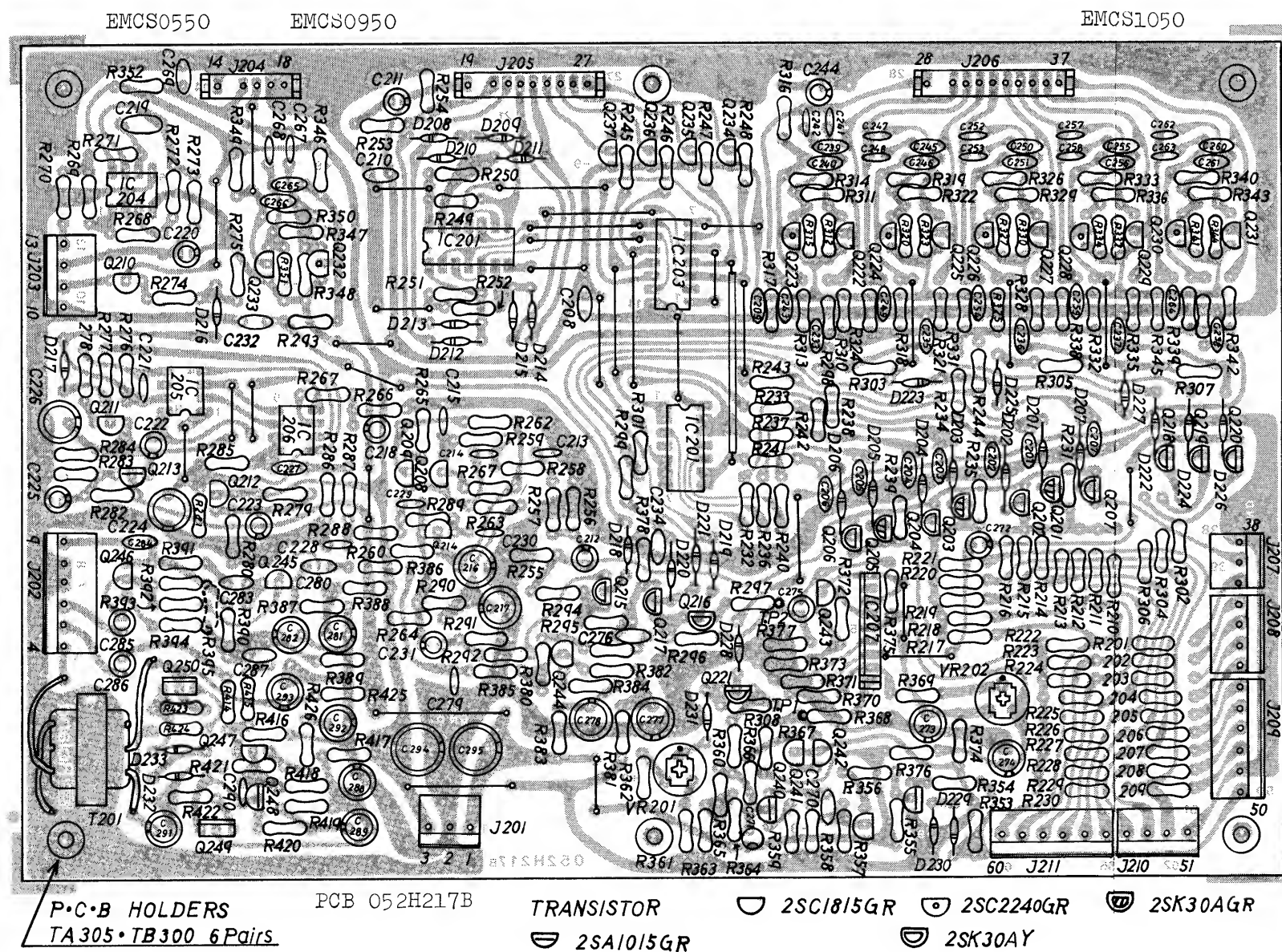
Table 1 shows relationship between played key and audio signals pass through analog switches.

Below key designation are, (1) switch number for the nine circuits, (2) generator output terminals number that supply signals to assigned switches. Some switches share the same output terminal, which deliver notes of a pitch from different drawbars.

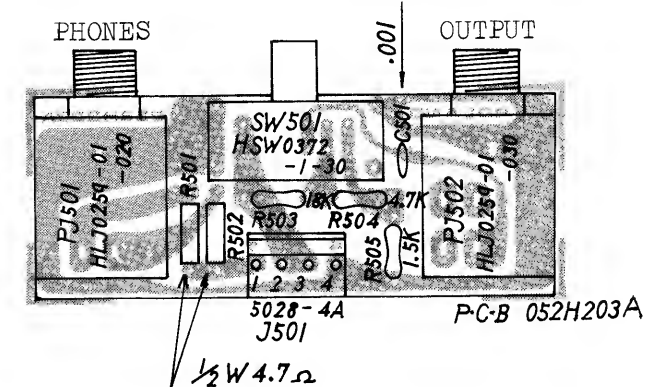




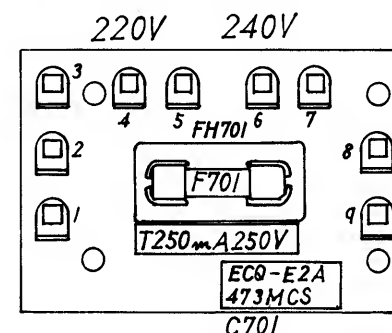
APH30B (141H030B)



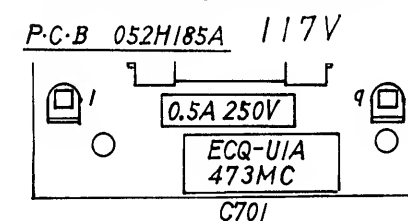
OPH75A (149H075A)



OPH78A (149H078A)



OPH77A (149H077A)



PSH44 (146H044)

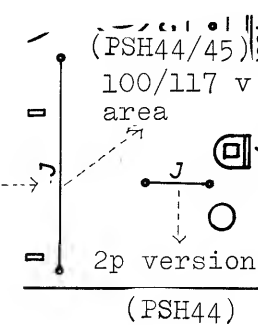
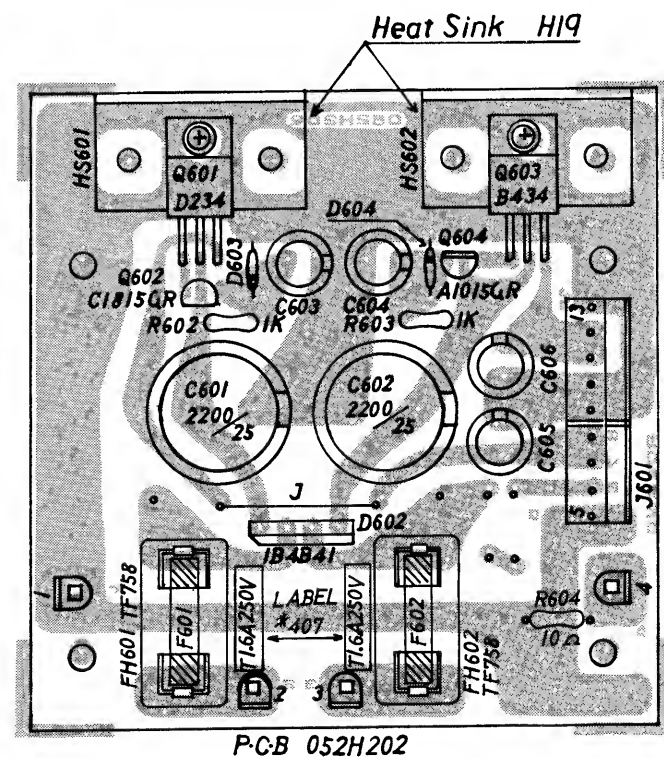
100 V. 117 V CSA

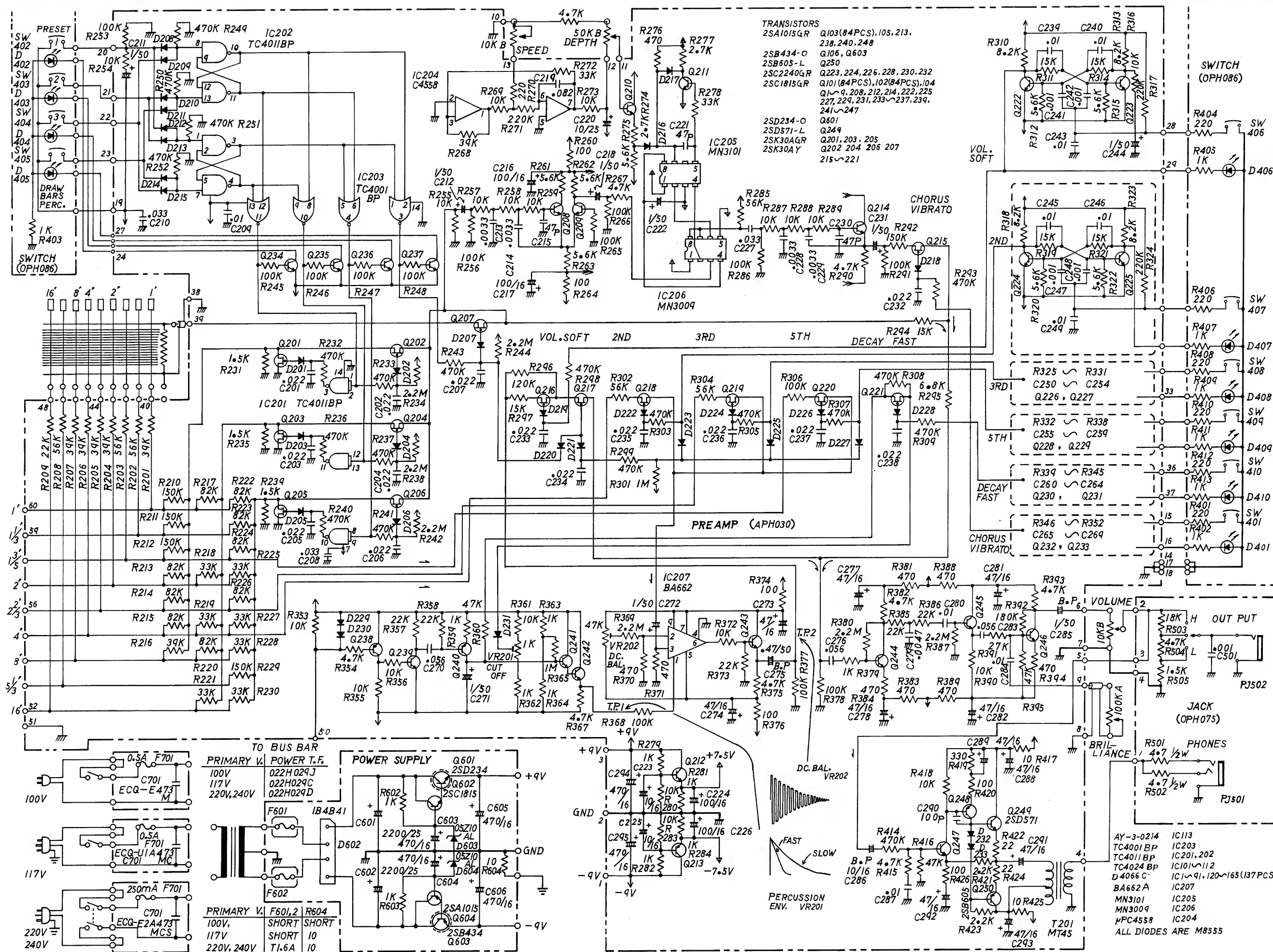
PSH45 (146H045)

117 V 3p

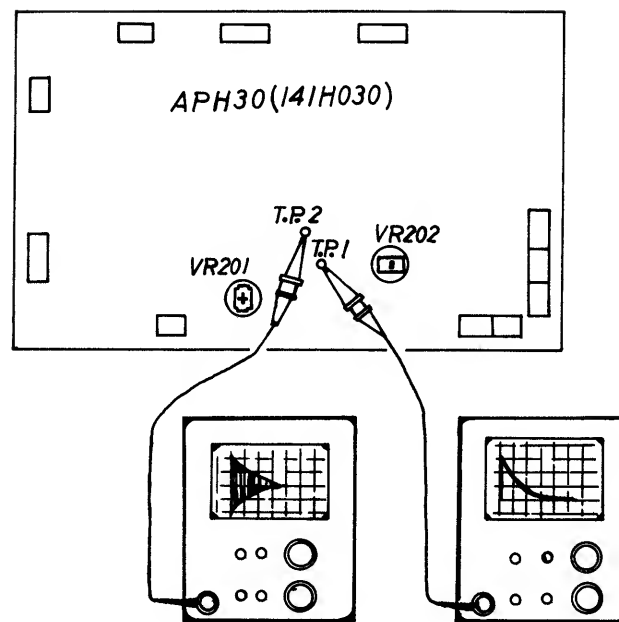
PSH46 (146H046)

220/240 V

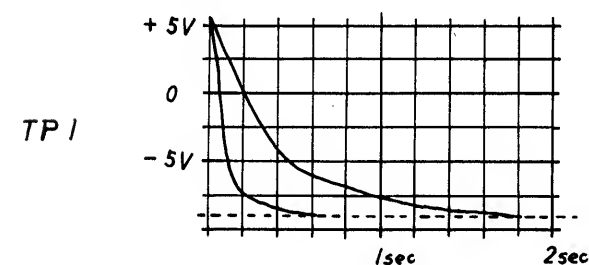




ADJUSTMENT



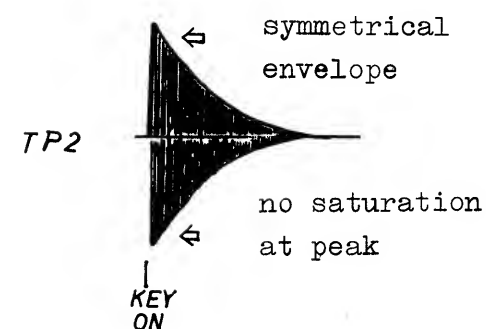
PERCUSSION DECAY



ADJUST VR201: FAST 0.6 sec
SLOW 1.7 sec

PERCUSSION DC BALANCE

SET : DRAW BARS PERCUSSION SWITCH:ON
PERCUSSION 2ND SWITCH:ON
DECAY FAST SWITCH:ON



ADJUST VR202: CENTERD WAVEFORM

PARTS LIST

Keyboard assy SK361-A

Drawbar set RD-109C

CABINET

081H221	Cabinet	H221
111-021	Rubber foot	G-5
059H011	Hinge	H11
086H018	Top cover	H18
093H006	Rim (on cover H18)	H6
072H067	Panel	H67 front
091H021	Endblock	H21 left
091H022	Endblock	H22 right
* Tablet--- see NOTES		
016-078	Knob no.78	
009-057	Jack HLJ0259-01-020 stereo	
009-021	Jack HLJ0259-01-030	

SWITCH

001-258	SDA1SA-1	power	100 V
001-259	SDA2SA-1	power	117 V
001-260	SDA4SA-1	power	220/240 V
001-206	HSW0372-1-30	slide	
*001-315	320. 2 E1-1	tab. white	
*001-317	320. 2 E1-1	tab. orange	
*001-320	320. 2 E1-1	tab. blue	
* See NOTES			

PCB

144H018A	AGH18A	(pcb 052H198A)
147H041	GTH41	(pcb 052H199)
141H030B	APH30B	(pcb 052H217B)
149H075A	OPH75A	(pcb 052H203A)
*149H086A	OPH86A	(pcb 052H218A)
149H076A	OPH76A	(pcb 052H185A) 100 V
149H077A	OPH77A	(pcb 052H185A) 117 V
149H078A	OPH78A	(pcb 052H185A) 220/240 V
146H044	PSH44	(pcb 052H202) 100 V
146H045	PSH45	(pcb 052H202) 117 V
146H046	PSH46	(pcb 052H202) 220/240 V
* For OPH86, see NOTES		

TRANSFORMER. COIL

022H029J	Pt H29J	100 V
022H029C	Pt H29C	117 V
022H029D	Pt H29D	220/240 V
022-131	Opt MT(ST)-45	
022-135	Coil 40M-067-018	10 uH

SEMICONDUCTOR

Transistor

017-022	2SB434-0	
017-010	2SD234-0 or 2SD526-0	
017-072	2SD571-L	
017-106	2SC1815-GR	
017-123	2SC2240-GR	
017-146	2SB605-L	
017-155	2SA1015-GR	
017-014	2SK30A-Y	FET
017-016	2SK30A-GR	FET

Diode

018-087	M8555	
018-089	1B4B41 rectifier bridge	
018-120	05Z10AL	zener
019-034	SLP135B	LED

IC

020-156	AY-3-0214	
020-051	TC4001BP	
020-040	TC4011BP	
020-076	TC4024BP	
020-254	μPD4066C (NEC) only	
020-160	BA662A	
020-224	MN3101 BBD driver	
020-215	MN3009 BBD 256 stages	
020-097	μPC4558	

POTENTIOMETER

026-003	EVHCOAK15B14	10 kΩ
026-004	EVHCOAK15B54	50 kΩ
026-176	EVHCOAK15A15	100 kΩ
EVHCOAK15 can be replaced by EVH8MA360....		
030-459	SR19R	1 kΩ trimmer
030-469	SR19R	47 kΩ trimmer

FUSE. FUSE HOLDER

008-040	MGP 0.5 A prim.	100.117 V
008-060	SEMKO T250 mA prim.	220/240 V
008-069	SEMKO T1.6 A sec.	220/240 V
012-003	Fuse clip TF-758 sec.	220/240V

CAPACITOR

Polyester film

035-047	ECQE1047MC	.047/1000 V 100 V
035-108	ECQU1A473MC	047/125AC 117 V
035-310	ECQE2A473MCS	047/1000 V 220/240V

Electrolytic

032-193	ECEA50NR47	.47 mfd 50 V B.P.
032-190	ECEA50N1	1mfd 50 V Bi-polar
032-191	ECEA16N10U	10mfd 50 V Bi-po.
032-224	CE15E1V010K	1mfd 35 V tantalum

OTHERS

Line cord strain relief

047-040	SR-4N-4	100 V
047-031	SR-6N3-4	117 V
047-003	BU-4801	220/240 V
047-023	EA1702B clamp	220/240 V
064-134	Holder no.134	
048H019	Heatsink H19	

NOTES:

Changes on Tablet Switches and the PCB (with serial number 960900)

The switches are changed along with the tablets to the following:

13129712	Switch KHC-11901
016H010	Tablet H10 wht
016H012	Tablet H12 orn
016H013	Tablet H13 blu

Since the pin size and spans are different between two types, switch PCB assembly is also changed to

149H086B OPH86B (pcb 052H261).

Although individual switch and tablet are not interchangeable, they are compatible when replaced as a PCB assy.